

# Inequalities on Graphs

## Question Paper

<b>Level</b>	OCR
<b>Subject</b>	Maths
<b>Exam Board</b>	GCSE (9-1)
<b>Topic</b>	Graphs of Equations and Functions
<b>Sub Topic</b>	Inequalities on Graphs
<b>Grade Level</b>	Grade 4
<b>Booklet</b>	Question Paper

**Time Allowed:** 28 minutes

**Score:** /23

**Percentage:** /100

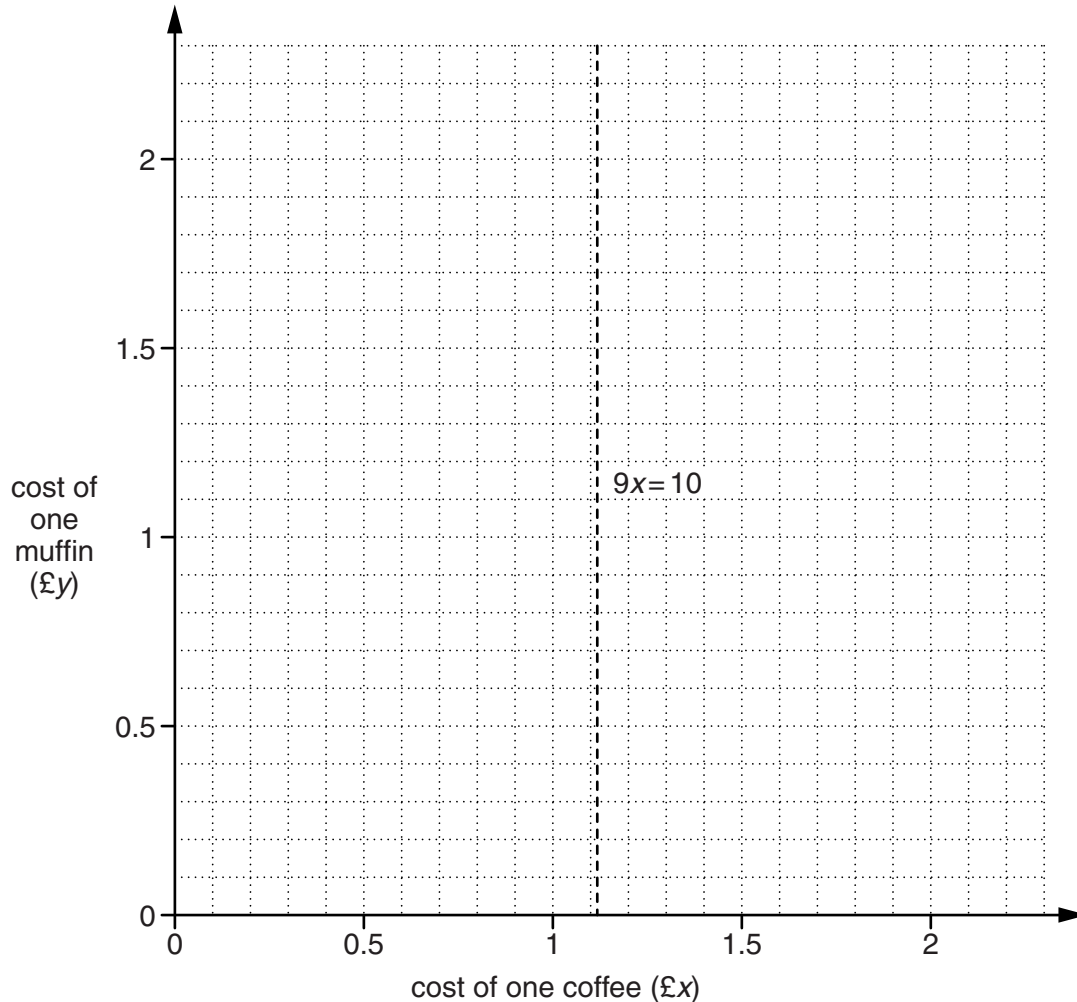
- 1 At a school event, muffins and coffee are sold.  
Pippa has £10 to spend on muffins and coffees.

One coffee costs £ $x$  and one muffin costs £ $y$ .

- (a) With £10, Pippa could buy a maximum of 9 coffees, so  $9x < 10$ .  
The line  $9x = 10$  has been drawn for you.

Indicate clearly, by shading, the region satisfying the inequality  $9x < 10$ .  
Label this region R.

[1]



- (b) With £10, Pippa could also buy 5 coffees and 5 muffins, so  $5x + 5y \leq 10$ .

Indicate clearly, by shading, the region satisfying the inequality  $5x + 5y \leq 10$ .  
Label this region T.

[2]

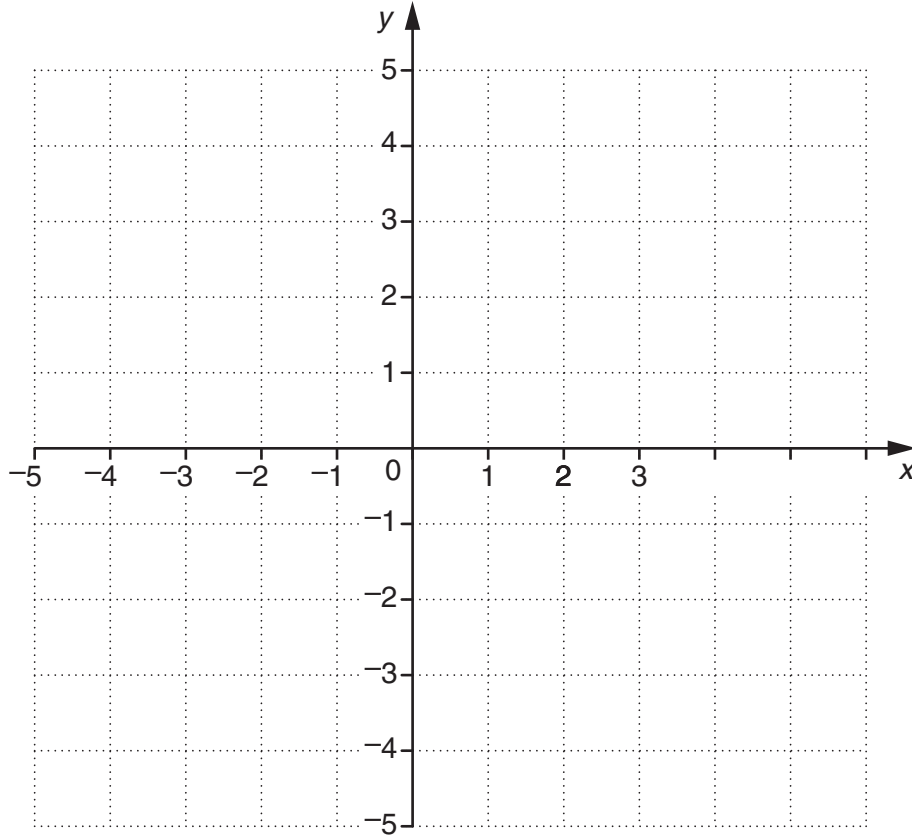
- (c) At the event, muffins and coffee are each priced in multiples of 50p.  
A coffee costs more than a muffin.

Represent this information on the diagram.  
Using your diagram, write down the cost of one coffee and one muffin.

(c) One coffee costs £ \_\_\_\_\_

One muffin costs £ \_\_\_\_\_ [3]

2 (a) On the grid, draw the line  $3x + 4y = 12$ .



[2]

(b) On the grid, indicate clearly the region R which satisfies all the following inequalities.

$$\begin{aligned} 3x + 4y < 12 \\ x > 1 \\ y > 0 \end{aligned}$$

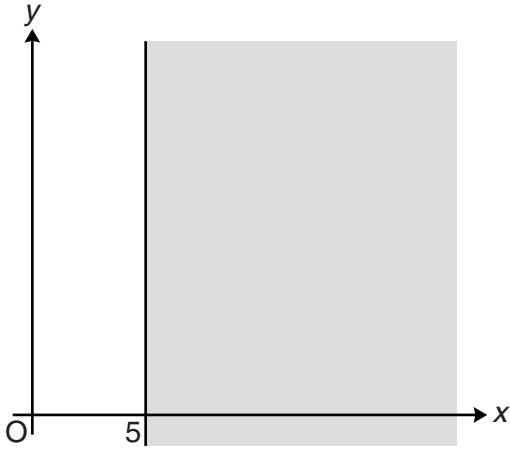
[2]

(c) Write down the integer values of  $x$  and  $y$  that satisfy all three inequalities.

(c)  $x =$  \_\_\_\_\_  $y =$  \_\_\_\_\_ [1]

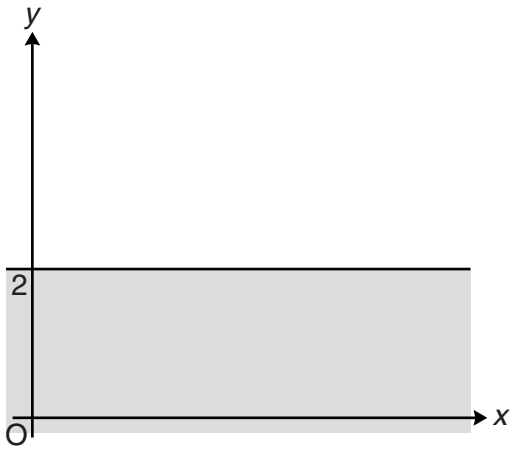
3 Write down the inequality represented by each of these shaded regions.

(a)



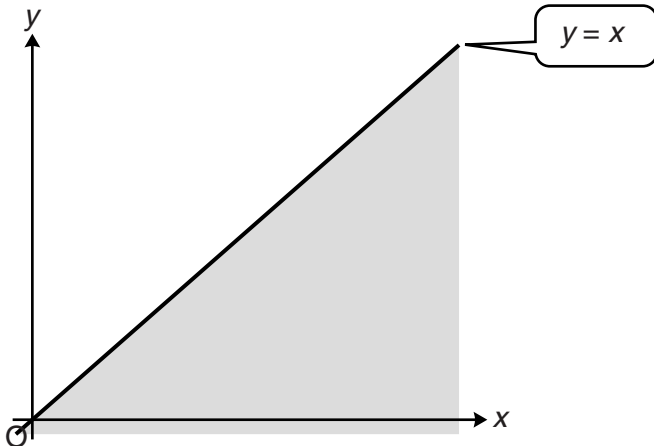
(a) \_\_\_\_\_ [1]

(b)



(b) \_\_\_\_\_ [1]

(c)

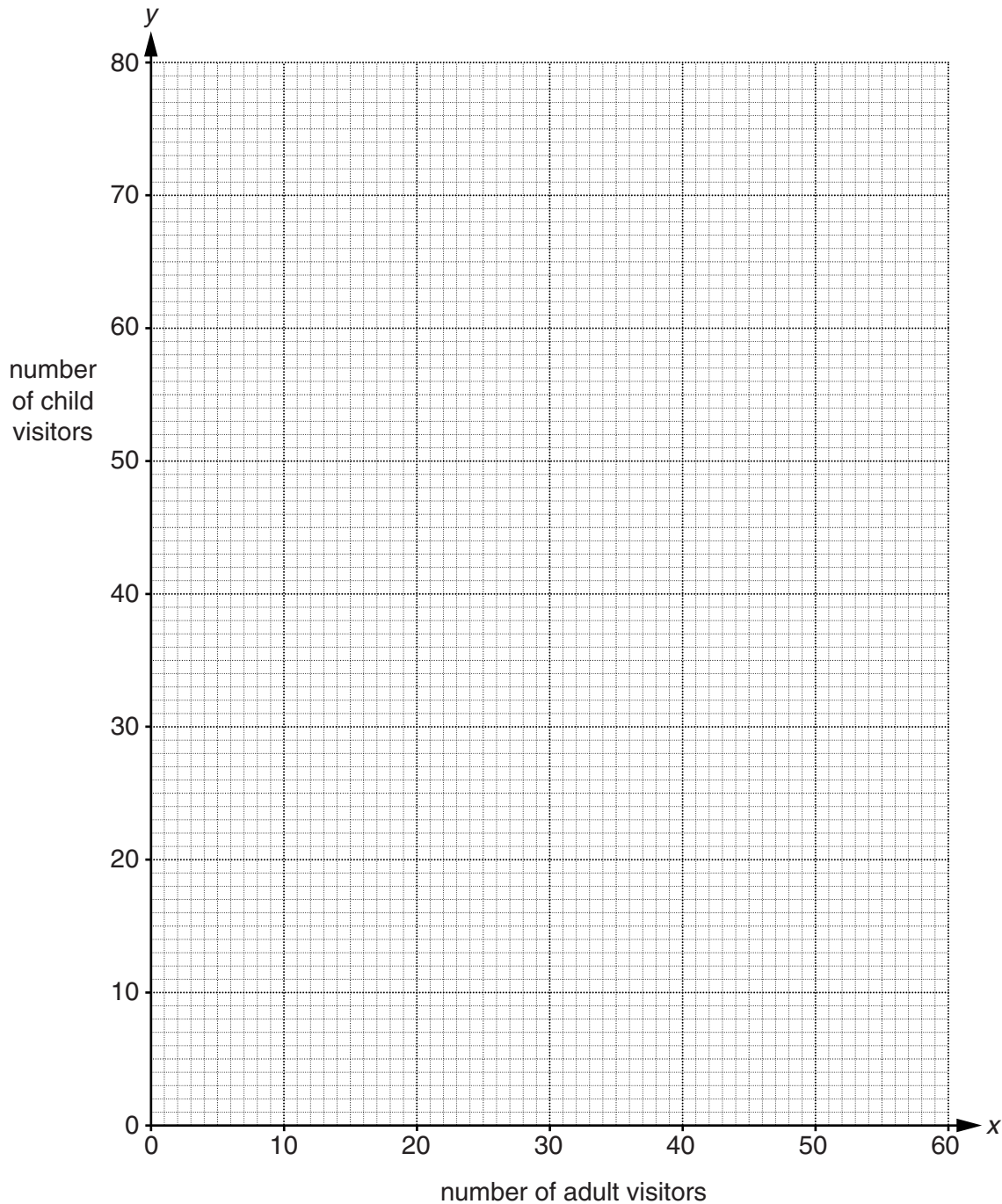


(c) \_\_\_\_\_ [1]

- 4 The entry fee to a stately home is £6 for an adult and £5 for a child. Kushala was working at the till and noticed that she had taken more than £300 in entry fees one morning.

Let  $x$  be the number of adult visitors and  $y$  the number of child visitors.

- (a) On the grid, represent the inequality  $6x + 5y > 300$ .  
Shade the area **not** required.



Kushala also noticed

- the number of child visitors was more than twice the number of adult visitors,
- there were less than 70 child visitors.

**(b) (i)** Write down two inequalities in  $x$  and  $y$  to represent this information.

**(b)(i)** \_\_\_\_\_  
\_\_\_\_\_ [2]

**(ii)** Represent your inequalities on the grid.  
Shade the area **not** required. [3]

**(c)** Kushala's manager thinks they had 30 adult visitors and 50 child visitors that morning.

**(i)** Explain why the manager must be wrong.

\_\_\_\_\_  
\_\_\_\_\_ [1]

**(ii)** Write down one possible pair of values for the number of adult visitors ( $x$ ) and child visitors ( $y$ ) that fits all the conditions.

**(c)(ii)** \_\_\_\_\_ adult visitors  
\_\_\_\_\_ child visitors [1]